FIG. 1
BACKGROUND ART

DA	SA	TYPE	USER DATA
6BYTE	6BYTE	2BYTE	

FIG. 2
BACKGROUND ART

ETHERNET SWITCH

HOST1
IP:165.243.141.1
MAC:00:40:2a:00:00:01

HOST10
IP:165243.141.10
MAC:00:40:2a:00:00:0a

MAC TABLE

No	MAC ADDRESS	PORT
1	..00:01	Port1
2	..00:0a	Port10
	....	
	....	

FIG. 3A
BACKGROUND ART

IP PACKET
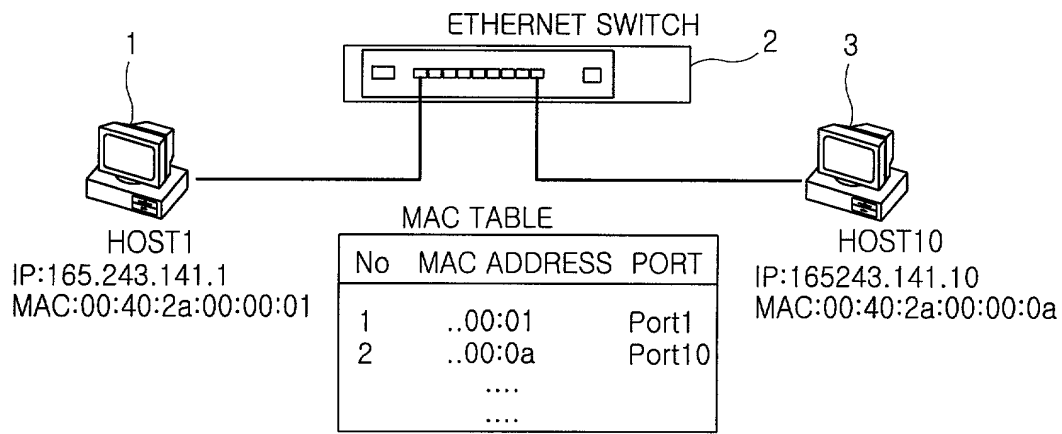
DA	SA	DI	SI	
FF	01	141.10	141.1	ARP_REQUEST
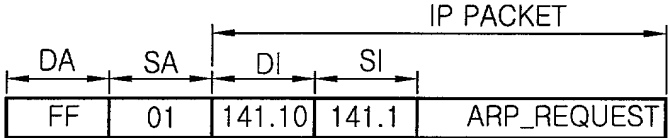
FIG. 3B
BACKGROUND ART

01	0a	141.1	141.10	ARP_RESPONSE

FIG. 3C
BACKGROUND ART

0a	01	141.10	141.1	IP DATA

FIG. 4
BACKGROUND ART
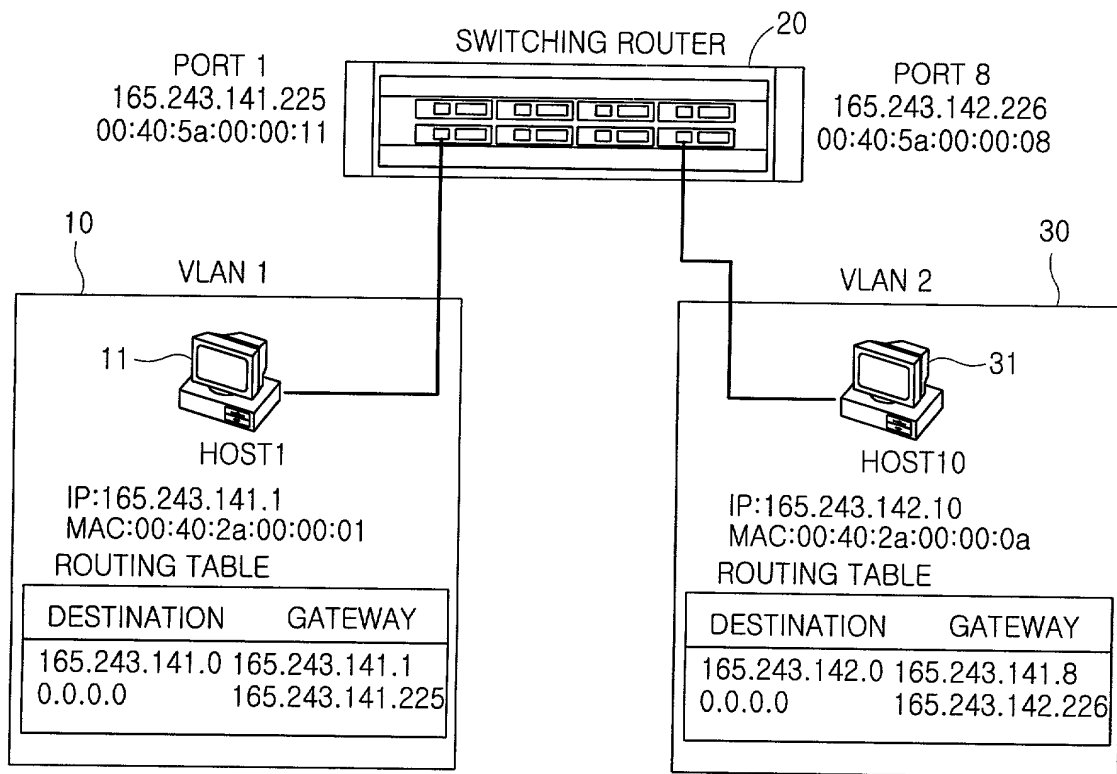
SWITCHING ROUTER /20

PORT 1
165.243.141.225
00:40:5a:00:00:11

PORT 8
165.243.142.226
00:40:5a:00:00:08

10

30

VLAN 1

11

HOST1

IP:165.243.141.1
MAC:00:40:2a:00:00:01
ROUTING TABLE

DESTINATION	GATEWAY
165.243.141.0	165.243.141.1
0.0.0.0	165.243.141.225

VLAN 2

31

HOST10

IP:165.243.142.10
MAC:00:40:2a:00:00:0a
ROUTING TABLE

DESTINATION	GATEWAY
165.243.142.0	165.243.141.8
0.0.0.0	165.243.142.226

MAC TABLE

No	MAC ADDRESS	PORT	ALAN
1	..00:01	Port1	VLAN1
2	..00:0a	Port10	VLAN2
	....		
	....		

ROUTING TABLE

DESTINATION	GATEWAY
165.243.141.0	165.243.141.225
165.243.142.0	165.243.142.226

FIG. 5
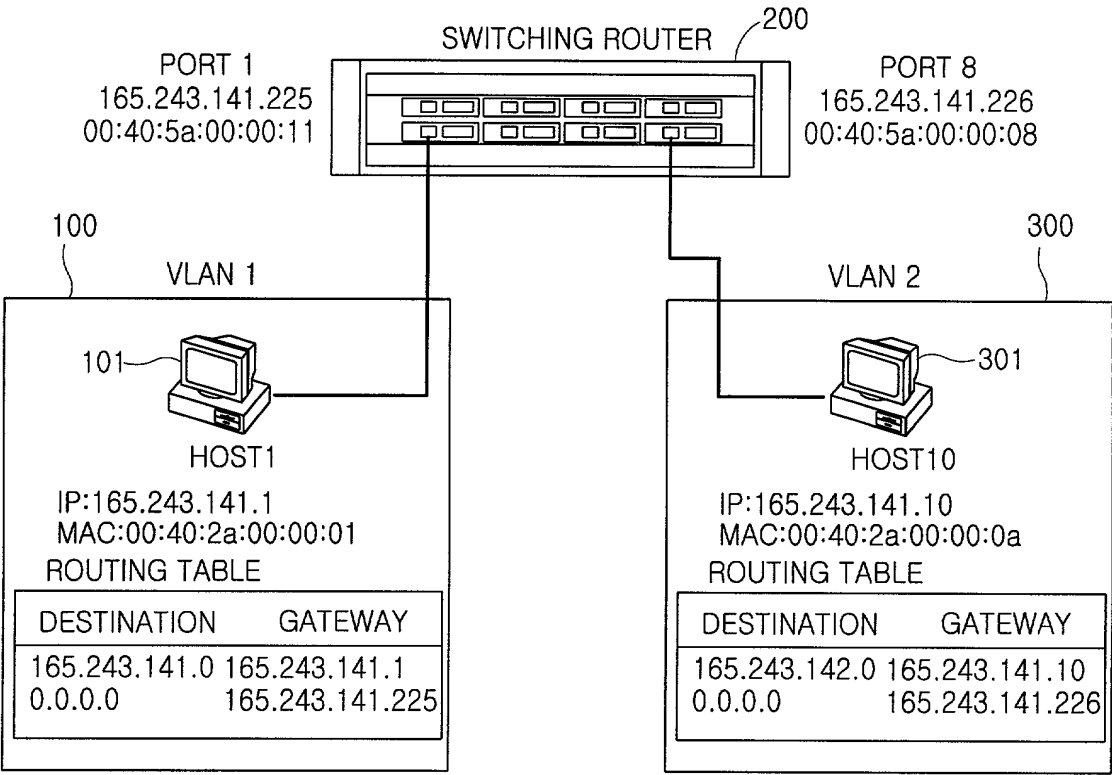
SWITCHING ROUTER 200

PORT 1
165.243.141.225
00:40:5a:00:00:11

PORT 8
165.243.141.226
00:40:5a:00:00:08

100

VLAN 1

101

HOST1

IP:165.243.141.1
MAC:00:40:2a:00:00:01
ROUTING TABLE

DESTINATION	GATEWAY
165.243.141.0	165.243.141.1
0.0.0.0	165.243.141.225

300

VLAN 2

301

HOST10

IP:165.243.141.10
MAC:00:40:2a:00:00:0a
ROUTING TABLE

DESTINATION	GATEWAY
165.243.142.0	165.243.141.10
0.0.0.0	165.243.141.226

MAC TABLE

No	MAC ADDRESS	PORT	ALAN
1	..00:01	Port1	VLAN1
2	..00:0a	Port10	VLAN2
	....		
	....		

ROUTING TABLE

DESTINATION	GATEWAY
165.243.141.1~5	165.243.141.225
165.243.141.6~10	165.243.141.226

FIG. 6A

FF	01	141.10	141.1	ARP_REQUEST

FIG. 6B

01	11	141.1	141.10	ARP_RESPONSE

FIG. 6C

FF	08	141.10	141.1	ARP_REQUEST

FIG. 6D

08	0a	141.1	141.10	ARP_RESPONSE

FIG. 6E

11	01	141.10	141.1	USER DATA

FIG. 6F

0a	08	141.10	141.1	USER DATA

FIG. 7

SWITCHING ROUTER

*GATEWAY1:IP 165.243.141.225 / MAC 00.40.5a.00.00.11
*GATEWAY2:IP 165.243.141.226 / MAC 00.40.5a.00.00.08

VLAN2/HOST10

IP:165.243.141.10 / MAC:00.40.5a.00.00.0a

ARP REQUEST FOR FINDING OUT MAC ADDRESS OF 10TH HOST IN PLACE OF FIRST HOST

| FF | 08 | 141.10 | 141.1 | ARP REQUEST |

(S15)

ARP RESPONSE

| 08 | 0a | 141.1 | 141.10 | ARP RESPONSE |

(S16)

UNICASTING TO 10TH HOST

| 0a | 08 | 141.10 | 141.1 | USER DATA |

(S20)

S12 SWITCHING MODULE TRANSMITS ARP PACKET TO ALL PORTS INCLUDED IN FIRST VLAN AND TO ROUTING MODULE SIMULTANEOUSLY

S14 ROUTING MODULE SEARCHES CORRESPONDING GATEWAY USING DESTINATION IP ADDRESS OF ARP PACKET

S17 SWITCHING ROUTER HAS BOTH VLAN INFORMATION AND MAC ADDRESS INFORMATION OF FIRST HOST AND 10TH HOST

S19 CHANGE OF ONLY DESTINATION MAC ADDRESS OF RECEIVED PACKET TO THAT OF 8TH HOST

VLAN1/HOST1

ARP REQUEST FOR FINDING OUT MAC ADDRESS OF 10TH HOST ON IDENTICAL IP SUBNET

| FF | 01 | 141.10 | 141.1 | ARP REQUEST |

(S11)

ARP RESPONSE IN PLACE OF 10TH HOST

| 01 | 11 | 141.1 | 141.10 | ARP RESPONSE |

(S13)

UNICASTING OF DATA TO MAC ADDRESS OF CORRESPONDING PORT OF SWITCHING ROUTER

| 11 | 01 | 141.10 | 141.1 | USERDATA |

(S18)

IP:165.243.141.1 / MAC:00.40.5a.00.00.01